

Electro-Optics

The Electro-Optics (EO) Laboratory supports the design, prototyping, demonstration, and testing of laser based remote sensing equipment; development and testing of an electro-optical tracking system; infrared radiometric measurements; and evaluation of visual and infrared imaging sensors. The Electro-Optics Laboratory meets all safety requirements of ANSI Z136.1.

This fully equipped laboratory can provide a 0.5-mile clear line of sight indoor/outdoor test range. Other special capabilities and equipment include:

- Precision two-axis positioning/tracking system
- Visible and infrared cameras
- Imaging radiometer
- Infrared collimator with precision thermometer
- Image processing workstation
- Optical bench
- Remote measurement systems (under development)

The laboratory environment is used to develop test and evaluation tools for the Navy's Virtual Imaging System for Approach and Landing (VISUAL). This information display system for landing signal officers aboard aircraft carriers integrates sunlight readable displays and processing components with shipboard imaging sensors, visual landing aids, information systems, and radar systems. VISUAL provides the landing signal officer with an ergonomic, non-demanding workstation to aid the pilot in flying a safe and expeditious recovery aboard carriers. VISUAL engineers and technicians are working with engineers in the API Aviation Data Management and Control System (ADMACS) Laboratory as well as radar engineers to develop and integrate emerging technologies and data networks.

The EO laboratory also develops and tests systems supporting the Navy's need to provide video surveillance during the launch and recovery of aircraft aboard air capable ships. Electro-optical tracking systems (EOTS) using



Approximate 0.5-mile clear line of sight enables outdoor testing to be set up directly from laboratory



Electro-optical tracking system has a pointing accuracy better than 200 μ rad

imaging sensors (infrared and visible) and a high-repetition-rate eye-safe laser rangefinder integrated onto a two-axis precision positioning platform have been developed, fielded, and tested. EOTS can provide high-resolution video imagery and three-dimensional position information for covert recovery of aircraft on carriers. The system automatically acquires, tracks, and generates telemetry data at ranges between 10 and 20 km. EOTS is especially useful in low visibility and night conditions.

Partnering Opportunities

Several mechanisms exist for partnering with NAVAIR Lakehurst. These include cooperative research and development agreements (CRADAs), commercial services agreements (CSAs), and education partnership agreements (EPAs). Under a CRADA, Lakehurst engineers and scientists work cooperatively with their peers in industry or academia on mutually beneficial research and development. The Navy has been given statutory authorization, via CSAs, to use Navy facilities to perform specific types of work for private parties. EPAs allow collaboration between NAVAIR Lakehurst and educational institutions.

Potential Applications

The EO Laboratory is available to businesses and universities to develop and test imaging and laser systems in a laboratory environment. Accurate positioning systems are adaptable and suitable for pointing optical imaging sensors and lasers. Rapid positioning to microradian accuracies can be achieved with these systems. Experienced personnel with sensor requirements analysis, optical design, remote sensing, machine vision, automatic video tracking, sunlight readable display, system integration, and field-testing are available to support customers with special requirements.

For More Information

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Technical point of contact:

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NAVAIR Lakehurst's Aircraft Platform Interface Facility was opened in August 2002. This 66,000-square-foot research and development facility supports the Navy's aircraft launch and recovery and support equipment mission. The technical capabilities covered by the 14 laboratories in this facility include power control systems; modeling, simulation, and data analysis/management; optical and lighting systems; integrated diagnostics; component evaluation; and applied technology. The synergism provided by collocating these teams of engineers, scientists, and technicians in one building further enhances this state-of-the-art facility.

NAVAIR Lakehurst researches, develops, tests, and procures aircraft launch and recovery systems and support equipment for Navy and Marine Corps aviation.



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